



## UMBRELLA-TYPE LAUNDRY DRYING RACK

### FIELD OF THE INVENTION

The invention relates to an umbrella-type laundry  
drying rack having a vertical support and having load-bearing  
5 arms for clothes lines, the load-bearing arms being disposed  
pivotably on the support each about a respective pivot pin,  
and the load-bearing arms are pivotable between a first  
position close to the support and a second position remote  
from the support and are coupled to one another such that  
10 upon pivoting of one of the load-bearing arms, the further  
load-bearing arms are jointly pivoted in the same way.

### BACKGROUND OF THE INVENTION

In general, to enable them to hold large amounts of  
laundry, laundry drying racks in their operational state are  
15 not inconsiderable in size. It has therefore already been

provided that they can be stored in a space-saving way by being collapsed. This means that before each use of the laundry drying rack, its load-bearing arms have to be folded out. Deploying the laundry drying rack requires the exertion of comparatively great force in the initial phase, until the load-bearing arms have moved past a certain angular position relative to the vertical support. To improve this unsatisfactory situation, the attempt has already been made to use a pull cord guided like a corkscrew for a wine bottle. But even such a device cannot make it easier to deploy the laundry drying rack until the load-bearing arms have been pivoted out of their vertical position of repose by a significant angular amount; that has to be done by hand.

To make it easier to pivot the load-bearing arms outward, it has already been proposed that a spreader body be mounted longitudinally displaceably on the vertical support

of an umbrella-type laundry drying rack; the spreader body cooperates with support elements mounted on spreader arms, and upon longitudinal displacement, it pivots the spreader arms and with them the load-bearing arms for the clothes

5 lines out of their folded-up position of repose. Such an apparatus can indeed facilitate deploying the laundry drying rack but entails major structural effort and expense.

#### OBJECT AND SUMMARY OF THE INVENTION

It is therefore the object of the invention to create a  
10 laundry drying rack of the type defined at the outset that assures simple deployment with high functional safety and reliability and that is simple to produce.

According to the invention, this object is attained in that, in an umbrella-type laundry drying rack of the type

defined at the outset, at least one load-bearing arm has a means for its forced deflection out of the first position outward, upon exertion of a force oriented away from the support to one of the other load-bearing arms. Because it is

5 easy to exert the force for deploying the laundry drying rack immediately onto a load-bearing arm, complicated transfer elements for this force are unnecessary. Only on at least one of the further load-bearing arms is a means for its forced deflection provided. When the laundry drying rack is

10 deployed, immediately after the forced deflection of the first load-bearing arm the further load-bearing arms are pivoted out of their position of repose as well, because of the coupling of the load-bearing arms to one another. A laundry drying rack of the invention has an especially small

15 number of components and is not only simple and economical to produce but also extraordinarily safe and reliable in operation and invulnerable to wear. It is true that a

plurality of load-bearing arms or even each load-bearing arm  
may be provided with a means for forced deflection out of the  
first position, that is, the position of repose, but  
experiments have shown that it is entirely adequate for such  
5 a means to be provided on only one of the load-bearing arms.

In an advantageous refinement of the invention, the  
load-bearing arm having the means for its forced deflection  
is disposed, relative to the support, opposite a load-bearing  
arm provided for exerting the force oriented away from the  
10 support; as a result, only a very slight exertion of force  
suffices to deploy the laundry drying rack.

Adequately high stability of the laundry drying rack is  
advantageously attained if the load-bearing arms are each  
braced on the support with a respective spreader arm that is  
15 pivotable on the one hand about a retaining shaft disposed on

the support and on the other about an articulation shaft  
disposed on the load-bearing arm. In an advantageous  
refinement of the invention, the laundry drying rack becomes  
simple to use and at the same time has high stability because  
5 the retaining shafts of the spreader arms are disposed  
fixedly on the support.

To assure simple, operationally safe and reliable  
deployment of the laundry drying rack, the pivot pins of the  
load-bearing arms are advantageously disposed on a sleeve  
10 that is displaceable relative to the support. Such an  
embodiment furthermore allows adjusting the height of the  
laundry drying rack. This means that the load-bearing arms  
for the clothes lines, in the deployed state of the laundry  
drying rack, can be fixed at different heights, making it  
15 easy to hang articles of laundry on the clothes lines,  
regardless of how tall the person performing this activity

is.

The laundry drying rack can have a large number of load-bearing arms. However, a great usable length of clothes line with simultaneously high stability and low weight of the laundry drying rack are advantageously obtained if - as  
5 experiments have shown - four load-bearing arms are provided.

In an advantageous refinement of the invention, one load-bearing arm has a handle, and this load-bearing arm is intended for exerting the force oriented away from the  
10 support. As a result, the introduction of force into the load-bearing arm is improved, without requiring complicated additional devices for operating it. It is conceivable for the handle on the load-bearing arm to be made adjustable, so that a user-specific setting can be made.

For the mean for forced deflection of the load-bearing arm, various embodiments are conceivable. It is advantageously possible to achieve virtually no operating wear of the laundry drying rack if, in a further refinement of the invention, the means for forced deflection of the load-bearing arm has a tilt lever that on the one hand can be pivoted about a tilt pin on the load-bearing arm and on the other can be braced on the support. Such an embodiment moreover means especially easy production of the laundry drying rack. The laundry drying rack can be opened especially easily and with only little exertion of force if the tilt lever carries the articulation shaft of the corresponding spreader arm, and the articulation shaft of the spreader arm is disposed between the tilt pin of the tilt lever and an end of the tilt lever that can be braced on the support.



Another advantageous, very precise means for forced deflection of the load-bearing arm has a toothed sleeve, which is displaceable relative to the support, and a gear wheel or gear wheel segment that engages the toothed sleeve and is disposed on the load-bearing arm. Advantageously, a very compact, space-saving structure can be achieved if the toothed sleeve is disposed displaceably in the sleeve, on which the pivot pins of the load-bearing arms are disposed and which is displaceable relative to the support. The number of components can be reduced further if advantageously the toothed sleeve is drivable by a gear wheel or gear wheel segment disposed on a load-bearing arm intended for exerting the force oriented away from the support.

In another advantageous refinement of the invention, the means for forced deflection of the load-bearing arm has a connecting rod disposed on the one hand pivotably on a

connecting rod sleeve that is displaceable relative to the support and on the other pivotably on the load-bearing arm.

In this way, an especially low-wear design that is secure against jamming is achieved. The laundry drying rack is

5 advantageously constructed especially simply and is operationally safe if, in an advantageous refinement of the invention, the connecting rod sleeve is drivable by a connecting rod that is connected to a load-bearing arm intended for exerting the force oriented away from the  
10 support.

#### DRAWING

The invention will be described in further detail below in terms of exemplary embodiments shown in the drawing.

Shown are

Fig. 1A, a side view of an approximately halfway open laundry drying rack with a tilt lever;

Fig. 1B, the laundry drying rack of Fig. 1A in the fully open state;

5            Fig. 2, a detail of a laundry drying rack of Figs. 1A, 1B, with one load-bearing arm in a folded-up position near the support;

Fig. 3, an enlarged detail of a laundry drying rack of Figs. 1A, 1B, with one load-bearing arm in an outward-deflected position;

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Fig. 4, a detail of a laundry drying rack of Figs. 1A, 1B, with one load-bearing arm in a fully outward-pivoted position;

Fig. 5, a detail of a laundry drying rack with a gear wheel segment and a toothed sleeve; and

Fig. 6, a detail of a laundry drying rack with a connecting rod and a connecting rod sleeve.

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#### DETAILED DESCRIPTION

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Fig. 1A - which like all the other figures is schematic - shows an umbrella-type laundry drying rack with a vertical support 1, on which load-bearing arms 2 for clothes lines, not otherwise shown, are disposed. The laundry drying rack has four load-bearing arms 2 disposed symmetrically to the center axis 4 of the vertical support 1; for the sake of simplicity, only the right and left load-bearing arms 2 have been shown here, while in this view the front and rear load-bearing arms have conversely been omitted. The load-bearing

arms 2 are located in a deflected-outward position in which they have been unfolded from the vertical support 1. The load-bearing arms 2 are disposed pivotably, about pivot pins 6, on a sleeve 8 that is displaceable relative to the support 1. For reasons of stability, the load-bearing arms 2 are also each braced on the support 1 by a respective spreader arm 10. Each spreader arm 10 is pivotable on the one hand about a retaining shaft 12 disposed on the support 1 and on the other about an articulation shaft 14 disposed on the load-bearing arm 2. The articulation shaft 14 on the left load-bearing arm 2 is not disposed directly on the load-bearing arm 2 but rather on a tilt lever 16, which is pivotable on the load-bearing arm 2 about a tilt pin 18.

The laundry drying rack of Fig. 1A is shown in Fig. 1B in the fully open state. The load-bearing arms 2 are now in the fully outward-pivoted position relative to the vertical

support 1, and the clothes lines - not shown here - extend taut, and with vertical spacing from one another, in the horizontal direction between the load-bearing arms 2. In Figs. 1A, 1B and all the other figures, identical or  
5 equivalent components are identified by the same reference numerals. It can be seen that in the open state of the laundry drying rack, the tilt lever 16 rests on the corresponding spreader arm 10.

Fig. 2 shows the left load-bearing arm 2 of the laundry  
10 drying rack of Figs. 1A, 1B in a first position, close to the support, where it is folded up against the vertical support 1. It can be seen that the load-bearing arm 2 has a tilt lever holder 20 with a tilt pin 18 of the tilt lever 16. In the folded-up position shown here, the tilt lever 16 rests on  
15 the one hand with a lug 22 on the vertical support 1 and on the other, it rests lengthwise on a spreader arm 10; the

spreader arm 10 is joined to the tilt lever 16 via an articulation shaft 14.

With reference to Figs. 1A, 1B and 2, the unfolding or deployment of the laundry drying rack proceeds as follows:

5 One load-bearing arm, which in terms of a vertical support 1 is opposite or in other words faces a load-bearing arm 2 having a tilt lever 16, is pulled away from the support 1, for instance by means of a handle, and the laundry drying rack is thus pulled open. As a result, the sleeve 8, to  
10 which all the load-bearing arms are secured, is pulled upward along the support 1; as a result, the tilt lever 16, by means of the load-bearing arm 2 connected to it and by means of a lug 22 of the tilt lever 16 that rests on the support 1, forces the load-bearing arm 2 outward. In a first  
15 intermediate position, which is emphasized in Fig. 1A by means of a detail III (shown enlarged in Fig. 3), the tilt

lever 16 is located approximately horizontally between the load-bearing arm 2 and the vertical support 1. The spreader arm 10 is in a half-open intermediate position.

As the laundry drying rack is pulled farther open, the load-bearing arms 2 reach the operating position shown in Fig. 1B. In it, the tilt lever 16 (as in its outset position shown in Fig. 2) is again placed against the spreader arm 10 (see detail IV in Fig. 1B, shown enlarged in Fig. 4).

An important factor in the laundry drying racks shown in Figs. 1A, 1B through 4 and in the other laundry drying racks shown in Figs. 5 and 6 and described hereinafter, is that the laundry drying rack in each case can be opened by simply pulling one load-bearing arm 2 away from a vertical support 1.



A detail of another embodiment of an umbrella-type laundry drying rack is shown in Fig. 5. In this laundry drying rack as well, a vertical support 1 is provided with four load-bearing arms 2, of which only two are shown here for the sake of simplicity. The load-bearing arms 2 are supported pivotably, by means of pivot pins 32, on a sleeve 30 that is displaceable relative to the support 1. On their lower end, the load-bearing arms 2 each have one gear wheel segment 34, which is disposed centrally to the pivot pin 32 of the respective load-bearing arm 2 and which engages a toothed sleeve 36 that is displaceable relative to the support 1. As in a laundry drying rack of Figs. 1A and 1B through 4, the laundry drying rack of Fig. 5 also has spreader arms on its load-bearing arms 2; the spreader arms are joined to the support 1 in the corresponding way and are not shown here. Pulling on a handle 38, which is disposed on one of the load-bearing arms 2, not only causes an outward

deflection of this load-bearing arm away from the vertical support 1 but also (with transmission by the gear wheel segment 34 and the toothed sleeve 36) a forced deflection of the load-bearing arm 2 that is located opposite, in terms of the vertical support 1, the load-bearing arm 2 that has the handle 38.

In Fig. 6, a detail of a further laundry drying rack is shown, with a vertical support 1 that has load-bearing arms 2 that are each joined pivotably to the support 1 about a respective pivot pin 6. The pivot pins 6 are disposed on a sleeve 8 that is displaceable relative to the support 1. A connecting rod sleeve 22 is also provided, which is likewise displaceable relative to the support 1 and is connected to each of the load-bearing arms 2 by a respective connecting rod 24. Each connecting rod 24 is mounted movably on the connecting rod sleeve 22, where it is pivotable about a pivot

pin 26, and on the load-bearing arms 2 where it is pivotable about a pivot pin 28. The load-bearing arms 2 of the laundry drying rack of Fig. 6 are likewise - analogously to the laundry drying racks of Figs. 1A and 1B through 5 - moreover provided with spreader arms, not shown here, which are also secured in a corresponding way to the support 1.

LIST OF REFERENCE NUMERALS

	1	(Vertical) support
	2	Load-bearing arm
	4	Center axis
5	6	Pivot pin
	8	Sleeve
	10	Spreader arm
	12	Retaining shaft
	14	Articulation shaft
10	16	Tilt lever
	18	Tilt pin
	20	Tilt lever holder
	22	Connecting rod sleeve
	24	Connecting rod
15	26	Pivot pin

	28	Pivot pin
	30	Sleeve
	32	Pivot pin
	34	Gear wheel segment
5	36	Toothed sleeve
	38	Handle